

**REMARKS**

The Examiner is thanked for the performance of a through search.

In this paper, independent Claim 1 is amended. No claims are canceled or added.

Hence, Claims 1-18, 23-33, 35, 37-38, and 40-43 are pending in the subject application.

An Information Disclosure Statement (IDS) is filed concurrently herewith.

Consideration of the references disclosed in the IDS and initialing of the attached PTO-1449 form are respectfully requested.

Each issue raised in the Office Action mailed May 10, 2006 is addressed hereinafter.

**I. ISSUES NOT RELATING TO PRIOR ART**

The specification has been objected to because of informalities. The specification is amended herein to correct these informalities and to conform the specification to the drawings. Specifically, typographical errors are corrected in the paragraph at page 8, line 21 to page 9, line 4 and in the paragraph at page 12, lines 5-8.

Claim 1 has been objected to because of informalities. Specifically, the Office Action alleges that the phrase "capable of" in line 6 of Claim 1 renders the claim indefinite. Even though the Applicants disagree that Claim 1 is indefinite, Claim 1 has been amended herein in order to further the prosecution of the subject application and not for any purposes related to patentability.

No new matter has been added by the amendments to the specification and the claims. Thus, for the reasons stated above, withdrawal of the above objections is respectfully requested.

**II. ISSUES RELATING TO PRIOR ART**

**A. CLAIM 23**

Claim 23 stands rejected under 35 U.S.C. § 102(e) as allegedly anticipated by

Hoffman et al., U.S. Patent No. 6,094,435 (“HOFFMAN”). The rejection is respectfully traversed.

An anticipation rejection cannot stand if a rejected claim contains one or more elements, limitations or steps that are not found in the cited prior art reference. *See Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548, 220 USPQ 193, 198 (Fed. Cir. 1983). Further, a rejection for obviousness is unsupported if the proposed combination of prior art references does not teach or suggest all elements of the claim or the complete claimed combination. Independent Claims 1, 10, and 23, from which all other claims depend directly or indirectly, recite subject matter not found in any of the cited references, alone or in combination. Therefore, all claims are patentable over the references of record.

1. Network Flow Routing Engine

Each of Claims 1, 10, and 23 includes the feature of **a network flow routing engine that determines network flow packet forwarding information in response to receiving network flow information associated with said output of said packet information extractor and provides said network flow packet forwarding information to said second device, wherein said second device uses said network flow packet forwarding information in generating said packet forwarding information.** In case of Claim 23, packet header information is referenced rather than an output of the packet information extractor and the Fast Forwarding Engine (FFE) is referenced rather than the second device.

HOFFMAN and the other cited references provide no teaching or suggestion of a network flow routing engine that provides network flow packet forwarding information to a second device, such as a Fast Forwarding Engine.

With respect to Claim 23, as well as Claims 1 and 10, the Office Action asserts that HOFFMAN describes a network flow routing engine in FIGs. 3 and 4 (reference numeral 32),

in col. 14, lines 51-55, and in col. 22, lines 8-22 and 35-50. This is incorrect.

In FIG.s 3-4, reference numeral 32 indicates a processor that analyzes packet header information and that determines, based on programmed heuristics, whether and how to create entries in the forwarding memory 40. (See, for example, col. 10, lines 56-58 and col. 14, lines 51-57). The functionality of processor 32 in HOFFMAN is to analyze packet headers and to determine whether to create entries in the forwarding memory. Significantly, however, nothing in HOFFMAN teaches or suggests that processor 32 provides any information or input to forwarding logic 52 on a packet-per-packet basis, where forwarding logic 52 uses such information or input to generate packet forwarding information for each particular packet. Simply put, neither FIGs. 3-4 nor the other cited passages from HOFFMAN describe that processor 32 provides any input to forwarding logic 52 that is used by the forwarding logic in generating per-packet forwarding information.

In contrast, Claims 1, 10, and 23 include the feature of a network flow routing engine that determines network flow packet forwarding information in response to receiving network flow information on a per-packet basis and provides said network flow packet forwarding information to a second device (e.g. a Fast Forwarding Engine), wherein the second device uses the network flow packet forwarding information in generating a packet forwarding information for each packet.

For the above reasons, HOFFMAN does not describe or suggest the network flow routing engine feature of Claim 23.

## 2. Recording Forwarding Information Rules

Each of Claims 1, 10, and 23 includes the feature of **wherein the second device accesses a forwarding memory to record one or more forwarding information rules as the forwarding information rules become available to the second device in response to**

**changes in any one of network topology, access control, and administrative and managerial rules.** In the case of Claim 23, the Fast Forwarding Engine (FFE) is referenced rather than the second device. Thus, each of Claims 1, 10, and 23 feature an additional capability of the second device or Fast Forwarding Engine, which capability is updating the forwarding memory or CAM in response to changes in forwarding rules.

In contrast, HOFFMAN and the other cited references provide no teaching or suggestion of a forwarding logic component that is capable of recording rules in a forwarding memory or CAM, as the rules become available, in response to changes in topology, access control, administrative or managerial rules.

With respect to Claim 23, as well as Claims 1 and 10, the Office Action asserts that HOFFMAN describes the above feature in col. 10, lines 55-57 and in col. 16, lines 3-20. This is incorrect. HOFFMAN expressly states that it is processor 32 and NOT forwarding logic 52 that records, updates, or modifies the entries in forwarding memory 40. (See at least col. 10, lines 55-57 and col. 14, lines 51-57). Further, in col. 16, lines 3-20, HOFFMAN describes that the Layer 2 and Layer 3 entries stored in forwarding memory 40 include information that is searched for a match to a header information of a received packet. However, neither this passage nor any other passage in HOFFMAN teaches that a Layer 2 or a Layer 3 entry is stored in forwarding memory 40 by forwarding logic 52; on the contrary, there are numerous passages in HOFFMAN that expressly state that processor 32 calculates routes, and creates, inserts, and updates entries in forwarding memory 40 that reflect the calculated routes. (See, for example, col. 8, line 62 to col. 9, line 8; col. 10, line 52-61; and col. 14, lines 51-57.) Further, no other reference of record cures this deficiency of HOFFMAN.

For the above reasons, HOFFMAN does not teach all features of Claim 23. Thus,

Claim 23 is patentable over HOFFMAN under 35 U.S.C. §102(e). Reconsideration and withdrawal of the rejection of Claim 23 is respectfully requested.

B. INDEPENDENT CLAIMS 1 AND 10

Independent Claims 1 and 10 stand rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over HOFFMAN in view of Carvey et al., U.S. Patent No. 6,359,879 ("CARVEY").

Claims 1 and 10 include features similar to the features of Claim 23 discussed above. Further, the Office Action relies explicitly on HOFFMAN and not on CARVEY to show prior disclosure of these features. However, since HOFFMAN does not describe or suggest the subject matter of these features, any combination of HOFFMAN with CARVEY necessarily fails to teach the complete combination of features recited in independent Claims 1 and 10. Thus, Claims 1 and 10 are patentable under 35 U.S.C. § 103(a) over HOFFMAN in view of CARVEY for at least the reasons given above with respect to Claim 23. Reconsideration and withdrawal of the rejections of Claims 1 and 10 is respectfully requested.

C. DEPENDENT CLAIM 35

Dependent Claim 35 stands rejected under 35 U.S.C. § 102(e) as allegedly anticipated by HOFFMAN. The rejection is respectfully traversed.

Claim 35 depends from independent Claim 23 and therefore includes each and every feature of the independent claim. Thus, Claim 35 is patentable under 35 U.S.C. § 102(e) over HOFFMAN for at least the reasons given above for Claim 23.

In addition, Claim 35 includes the feature of **wherein said Fast Forwarding Engine is coupled to an input access Content Addressable Memory and an output access Content Addressable Memory.**

HOFFMAN does not teach or suggest a forwarding logic component that is coupled to an input access CAM and an output access CAM. The Office Action asserts that HOFFMAN describes such feature in col. 11, lines 58-62. This is incorrect.

In col. 11, lines 58-62, HOFFMAN states:

In a preferred embodiment, the forwarding memory 40 allows multiple matches for a layer 2 search. The processor 32 ensures that the order of the entries is such that if an address/port combination exists in the forwarding memory, that entry is selected.

The above passage describes how processor 32 maintains Layer 2 entries in forwarding memory 40. However, neither the above passage nor any other passage in HOFFMAN describes an input access memory and an output access memory that are separate and that are both coupled to forwarding logic 52.

In contrast, Claim 35 includes the feature of a Fast Forwarding Engine that is coupled to an input access CAM and an output access CAM. The Fast Forwarding Engine uses the input access CAM to determine whether access for a particular packet is permitted at the input interface at which the packet is received; similarly, the Fast Forwarding Engine uses the output access CAM to determine whether access for the particular packet is permitted at the output interface to which the packet is to be sent.

For the reasons given above, HOFFMAN does not describe or suggest all features of Claim 35. Thus, Claim 35 is patentable over HOFFMAN under 35 U.S.C. § 102(e).

Reconsideration and withdrawal of the rejection of Claim 35 is respectfully requested.

D. DEPENDENT CLAIMS 2-9, 11-18, 24-33, 37-38 AND 40-43

Claims 2-3, 7-9, and 11-16 stand rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over HOFFMAN in view of CARVEY. Claims 24-29, 31-33, 37-38 and 40-43 stand rejected as allegedly anticipated under 35 U.S.C. § 102(e) by HOFFMAN. Claim 30 stands

rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over HOFFMAN in view of KERR et al., U.S. Patent No. 6,513,108 (“KERR”). Claims 4-6 and 17-18 stand rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over HOFFMAN in view of CARVEY, and further in view of Freitag, Jr., U.S. Patent No. 6,237,054 (“FREITAG”).

Each of Claims 2-9, 11-18, 24-33, 37-38 and 40-43 depends from one of independent Claims 1, 10, and 23, and thus includes each and every feature of the independent base claim. Furthermore, in rejecting Claims 2-3, 4-6, 7-9, 11-16, 17-18, and 30 the Office Action relies explicitly on HOFFMAN, and not on CARVEY, KERR, or FREITAG to show the features discussed above with respect to Claims 1, 10, and 23. Because HOFFMAN does not teach the subject matter of Claims 1, 10, and 23, any combination of HOFFMAN with the other three references necessarily fails to teach the complete combination recited in any dependent claim of Claims 1, 10, or 23. Thus, each of Claims 2-9, 11-18, 24-33, 37-38 and 40-43 is allowable for the reasons given above for Claims 1, 10, and 23.

In addition, each of Claims 2-9, 11-18, 24-33, 37-38 and 40-43 introduces one or more additional features that independently render it patentable. However, due to the fundamental differences already identified, to expedite the positive resolution of this case a separate discussion of those features is not included at this time. Therefore, it is respectfully submitted that Claims 2-9, 11-18, 24-33, 37-38 and 40-43 are allowable for the reasons given above with respect to Claims 1, 10, and 23. Reconsideration and withdrawal of the rejection of Claims 2-9, 11-18, 24-33, 37-38 and 40-43 is respectfully requested.

### III. CONCLUSION

The Applicants believe that all issues raised in the Office Action have been addressed. Entry of the Request for Continued Examination filed concurrently herewith is respectfully requested. Further, for the reasons set forth above, the Applicants respectfully submit that

allowance of the pending claims is appropriate. Reconsideration of the subject application is respectfully requested in light of the amendments and remarks herein.


The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

A petition for extension of time, to the extent necessary to make this reply timely filed, is hereby made. If applicable, a law firms check for the petition for extension of time fee is enclosed herewith. If any applicable fee is missing or insufficient, throughout the pendency of this application, the Commissioner is hereby authorized to charge any applicable fees and to credit any overpayments to our Deposit Account No. 50-1302.

Respectfully submitted,

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